

1. A dispensing pump comprising:

- A) a pump body including an output member for undergoing reciprocal motion over a predefined range and along a piston axis,
- B) a pump manifold attached to said pump body and including an input port, an output port, first means for defining a first chamber extending along the pump axis for receiving said output member and second means defining a second chamber intersecting said first chamber for providing a path between said input and output ports wherein said first and second chambers define a closed reservoir between said input and output ports and wherein said output member is in a non-sealing relationship with said first chamber defining means,
- C) a shuttle valve disposed in said second chamber for translation therein along a shuttle valve axis between a first position for reestablishing a flow path between said input port and said first chamber and a second position for establishing a flow path between said first chamber and said output port,
- D) fill and dispense actuators for moving said shuttle valve to said first and second positions respectively.